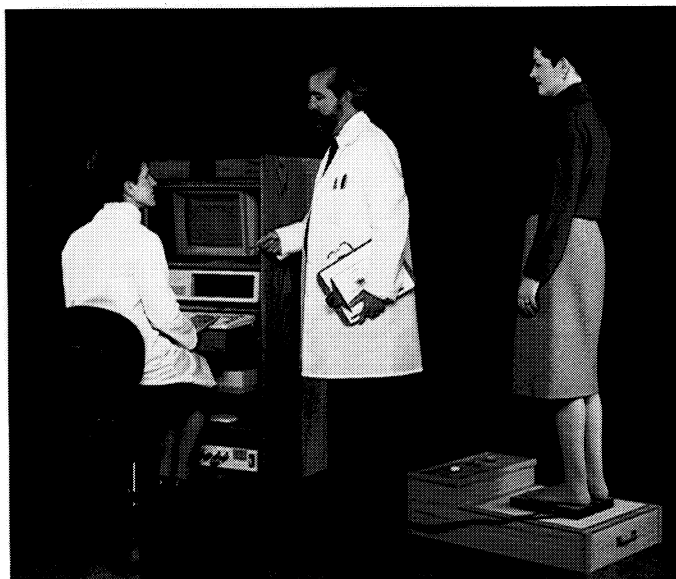


Balance System

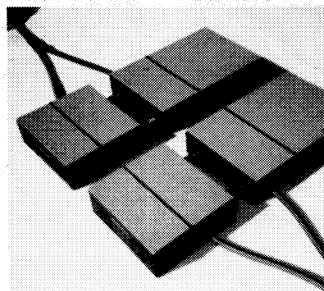
A new system available to the medical profession is the TherEx AT-1 Computerized Ataxiometer for precise evaluation of posture and balance disturbances that commonly accompany neurological and musculoskeletal disorders. Manufactured by TherEx, Inc., Woodside, California, it is a commercial spinoff from a system developed for Ames Research Center studies of changes in posture and balance that occur after exposure to weightlessness, a potential problem of long duration space flight. According to TherEx president Dr. John M. Medeiros, the AT-1 has wide applicability in identifying and treating balance disturbances associated with such conditions as sport, orthopaedic and neurological injury, or age-related declines in postural stability.

The AT-1 makes visible otherwise imperceptible actions of the body, enabling a clinician to establish precisely the patient's level of stability, then plan a treatment program. The system serves as an assessment tool, a



treatment monitor and a rehabilitation training device. It allows the clinician to document quantitatively the outcome of treatment and to analyze data over time to develop outcome standards for several classifications of patients. The AT-1 can be used to evaluate specifically the effects of surgery, drug treatment, physical therapy or prosthetic devices.

The complete system, shown above, includes two strain-gauged footplates, signal conditioning circuitry, a computer, monitor, printer, and a stand-alone tiltable balance platform. The system is available in stationary and portable versions. The footplates are shown in closeup at right above. They are four independent vertical force-



measuring transducers for measuring the pressure on the ball and heel of each foot. The footplates were separately developed by Keith H. MacFarland, president of Straindyne Engineering Company, Los Altos, California, based on his own technological expertise and

an earlier development by the Hebrew University in Israel.

The footplates can be moved to adapt to various posture forms, such as standing with feet together, with feet in tandem, standing at ease or standing on a tilting platform. The footplates measure weight displacements that reflect the amount and direction the patient sways in forward-backward or left-right movements. A typical test sequence involves standing on a stable base, first with eyes open, then closed, followed by standing on the tilting platform with eyes open, then closed.

AT-1 results are displayed on the monitor in a simple graphics format. Movement of the instantaneous center of pressure over the 25-second data collection period is plotted with respect to each of the four footplate quadrants. The degree of postural instability is displayed as a single number that expresses the sway pattern, allowing easy comparison of different tests. The monitor also shows the center of pressure in terms of percent of body weight, which enables comparisons among different patients with different weights. TherEx has licensed the technology to Chattecx Corporation, Chattanooga, Tennessee for world-wide sales and marketing. ▲